

## CLAIMS

What is claimed is:

1. A method for constructing an interest point detector comprising:

obtaining a set of encoding functions describing a plurality of data

5 samples of a data set;

obtaining a set of encoding factors associated with said set of encoding functions;

obtaining a plurality of numerical descriptors associated with said plurality of data samples by analyzing said set of encoding factors using a threshold criterion; and

obtaining a subset of numerical descriptors from said plurality of numerical descriptors by analyzing said plurality of numerical descriptors.

2. The method of claim 1 wherein said data samples further comprise image data samples.

3. The method of claim 1 wherein said set of encoding functions further comprises a set of basis functions.

4. The method of claim 1 wherein said step of obtaining a set of encoding factors further comprises computing a set of encoding coefficients.

5. The method of claim 1 wherein said step of obtaining a subset of numerical descriptors further comprises obtaining range criteria for selecting said subset of numerical descriptors from said plurality of numerical descriptors.

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6. A method for processing image data comprising:

obtaining image data for at least one image;

obtaining a plurality image samples from said image data;

producing a set of encoding functions for said at least one image;

10 extracting a set of encoding factors associated with said set of encoding functions for each one of said plurality of image samples;

obtaining a plurality of target images by concatenating two sets or more of said set of encoding factors;

15 obtaining a set of of numerical descriptors using said set of encoding factors for each one of said plurality of target images; and

obtaining an image object detector using said plurality of numerical descriptors from said at least one image.

7. The method in claim 6 wherein said step of obtaining image data for at least one image further comprises obtaining digitized image data.

8. The method in claim 6 wherein said step of obtaining image data for at least one image further comprises convolving said image data with a numerical filter.

9. The method in claim 6 wherein said plurality of image samples further comprises adjacent image areas.

10. The method in claim 6 wherein said plurality of image samples further comprises a plurality of overlapping image areas.

11. The method in claim 6 wherein said plurality of image samples further comprises a plurality of non-overlapping image areas.

12. The method of claim 6 wherein said step of producing a set of encoding functions further comprises producing a set of basis functions.

13. The method of claim 6 wherein said step of producing a set of encoding functions further comprises producing an overcomplete set of encoding functions.

14. The method of claim 6 wherein said plurality of encoding factors further comprises a plurality of encoding coefficients.

15. The method of claim 14 wherein said plurality of encoding coefficients further comprises a plurality of coefficients having a sparse distribution.

16. The method of claim 6 wherein said step of obtaining a plurality of numerical distributions further comprises computing a standard deviation threshold.

17. The method of claim 6 wherein said step of obtaining a plurality of numerical distributions further comprises computing a set of boundaries for selecting from said plurality of numerical descriptors.

18. The method of claim 6 wherein said step of obtaining an image object detector further comprises using an association graph.

19. The method of claim 6 wherein said step of obtaining an image object detector further comprises measuring a similarity value between a plurality of point pairs from said at least one image.

20. The method of claim 6 wherein said step of obtaining an image object detector further comprises locating groups of target image pairs having a highest valued maximal clique.

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